PERITHECIA WITH AN INTERASCICULAR PSEUDOPARENCHYMA

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(WITH PLATE XXX)

Taxonomic import is attached to the presence of paraphyses between the asci in the perithecium or other ascigerous structure. For this reason, as well as on purely morphological grounds, the structure to be here described is of interest.

The collection was made March 31, 1913, at Jayuda, Porto Rico, on the common Maya (*Bromelia pinguin*). Large leaves or portions of leaves were dead and rather thickly set with intensely black bodies, which on microscopic examination were readily revealed as perithecia, bearing abundant asci. Ordinary examination of material boiled in water or in potash solution, then teased apart and crushed, showed no strikingly unusual features about the asci, except that it was difficult to decide whether or not paraphyses were really present. Material was softened in lactophenol for two days, washed, and then imbedded in paraffin through xylol, and sectioned.

From the sections it is clearly apparent that the black, thick, perithecial wall is sharply limited on its inner side, and that the central area, which in most perithecia is merely a cavity or a cavity partially filled with asci and paraphyses, is in this case occupied by a pseudoparenchyma. The perithecial wall cells are dark and thick-walled (figs. 2–3). The interascicular pseudoparenchyma is composed of thin-walled, hyaline cells, small and of quite uniform size. In relatively old perithecia with mature asci the spaces between and above the asci are completely filled with the pseudoparenchyma. In still older perithecia the interascicular pseudoparenchyma is seen to break down, beginning at the ostiole. An example of this is shown in fig. 1. As the ostiolar tissue disorganizes a mycelium penetrates down through it; whether this mycelium belongs to this fungus or to another is not known

(fig. 1). In young perithecia which do not yet show asci, the whole central portion of the perithecium is filled by the pseudoparenchyma (fig. 2). It is of interest to know how the asci develop within this structure, but the material did not afford all the evidence desired. The asci, however, are all basal and arise from any part of the base of the perithecium (figs. 3, 4), and since asci of various ages are seen imbedded in the pseudoparenchyma, it is apparent that they grow out into it; and since there is no evidence of crowding exhibited by the pseudoparenchyma cells near the asci, the asci probably digest the pseudoparenchyma as they grow forward. Indeed the pseudoparenchyma is very tenuous and is probably very easily disposed of. Fig. 4 shows an ascus that has shrunk, leaving a free space between itself and the surrounding pseudoparenchyma. The structure of this perithecium suggests the condition in the perithecium of *Penicillium* and the Plectascineae generally, where the asci are scattered in a pseudoparenchyma. This case is different, in that the asci in this fungus are not scattered but arise basally. The similarity, however, suggests a relationship between the Plectascineae and the Sphaeriales.

In the Erysiphaceae the asci develop *pari passu* with the perithecium, and at certain stages may show asci with parenchyma-like cells between them (cf. fig. 30, pl. 2., HARPER, R. A., Carnegie Inst. Publ. 37, September, 1905). In certain other fungi the young perithecium is solid throughout and pseudoparenchymatous; while later the central cells disorganize and a central cavity results. The asci push up into this cavity. Neither of these conditions presents an exact parallel with that of the fungus under consideration. A simple rational inference is to regard the case as one of delayed dissolution of the pseudoparenchymatous central region of the developing perithecium. The fact that this structure was not clearly seen without good thin sections raises the question whether similar conditions may not exist in other perithecia, and may have been overlooked because the microtome has not been employed.

The mycelium of this fungus is interesting on account of its great variation in shape and size (fig. 5). The ostiole is lined by

a fringe of projecting toothlike or clawlike cells. The perithecia often occur solitary, when they are seen to be clearly sphaeriaceous in character. Often there are two (fig. 6), more rarely three, lying together. Such considered by themselves might be regarded as dothideaceous. The fungus appears to be clearly sphaeriaceous, and owing to the peculiar character of the pseudoparenchyma I propose it as a new genus.

Desmotascus, gen. nov.—Mycelium and perithecium black, sphaeriaceous, ostiolate, short-beaked. Asci with an interascicular pseudoparenchyma, 8-spored. Spores nearly hyaline, 1-celled.

It differs from *Phomatospora* in the character of the interascicular pseudoparenchyma. Name from δεσμώτης, prisoner. The type is the following:

Desmotascus portoricensis, sp. nov.—Mycelium dark, varying in diameter from 4 to 17 μ. Perithecia 119–190 μ wide, 85 μ high, black, roughly spherical, solitary or in groups of two or three, immersed papillate or short-beaked, ostiolate. Asci 8-spored, oblong, obtuse, thickened at apex, 50–85×17 μ. No paraphyses, but the perithecial cavity filled by a pseudoparenchyma. Ascospores oblong, somewhat irregular, 20–31×8.5–10 μ, pale straw-colored.

On *Bromelia pinguin*, Mayaguez, 964 (type); 964–1 type slide.

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EXPLANATION OF PLATE XXX

FIG. 1.—Ostiole with mycelium entering and disorganizing the tissue.

FIG. 2.—Whole interior of perithecium filled with pseudoparenchyma (*h. p.*).

FIG. 3.—Perithecium with asci, showing origin from various parts of base of perithecium.

FIG. 4.—Showing asci shrunk away from interascicular pseudoparenchyma (*h. p.*).

FIG. 5.—Showing variation in size and shape of internal mycelium (*h. p.*).

FIG. 6.—Two perithecia showing beaks (*l. p.*).

FIG. 7.—Ascus and spores (*h. p.*).